los cometas capturados en la familia de Júpiter se mueven en órbitas retrógradas ($i > 90°$) lo que está en contradicción con las observaciones. Se analizan estos resultados en función de las posibles fuentes de los cometas de la familia de Júpiter.

DYNAMICAL BEHAVIOR OF ASTEROIDS WITH HIGH ECCENTRICITY

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This paper presents a numerical study of motion of asteroids with high eccentricity and near some resonance with Jupiter. We have integrated the equations of motion of the elliptic restricted three body problem for several conditions within 3:1, 3:2, 2:1 resonances for a time interval of 10^4 periods of Jupiter and for even longer special cases.

The numerical integrations were performed taking into account fictitious asteroids with $i = 0$, $e = 0$ and real ones with $i = 0$, and the corresponding eccentricity according to the "Ephemerides of Minor Planets". The mean motions of these objects are in conmensurability $(q+1)/q$ and $(q+2)/q$ with Jupiter. The integrations were carried out in a MicroVAX II with the Burlisch-Stoer integrator with variable step and a 1.E–12 tolerance. The Sun-Jupiter-Asteroid dynamical pattern was used, with $M = 1$, $m_j = 1/1047.355$, $m_a = 0$. The equations of motion are defined for a non-rotating heliocentric system with the x-axis directed to the initial perihelion of the asteroid. This program allows us to determine, by means of controlling the velocity of the asteroid, the instant of passing through its perihelion and to calculate, for this moment, the position of Jupiter and the orbital elements for both bodies.

A bi-dimensional map is analized whose variables are the energy of two-body problem (Sun-asteroid), proportional to the inverse of the semi-major axis, and the phase angle (φ) between Jupiter and the asteroid, in the instant of passing through perihelion. The results show that these dynamical systems have a quasi-periodical behavior (regular motions) on surfaces of sections (1/a, φ), obtained for dx/dt = 0. This agrees with the observations of the 3:1 resonance that corresponds to Alinda's, a librator with $e = 0.56$ and the 3:2 resonance where Hilda group is.

In the 2:1 case, a chaotic motion is obtained for asteroids with low eccentricity while it is not so for those with higher eccentricities.

To go on with this research a second disturbing mass will be considered, which is a restricted four body system and the changes that may happen in the phase space will be analized.

C_2 SCALE LENGTH AND GAS VELOCITY IN COMET KOHOUTEK 1973 XII

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More than 208 photoelectric observations of comet Kohoutek 1973f = 1973 XII made during 70 days, with diaphragms in the *UBV* system, have been collected and analyzed. Plots of partial magnitudes versus diaphragm diameter were made for each day, and used to measure MIU, the ratio of the daughter to the parent molecule scale length, in a Haser model. It is expected on physical grounds, that MIU should be independent of the distance to the Sun, R, because it is only a function of atomic parameters, and the dependence on heliocentric distance is the same for both molecules. This approximation is valid if the coma is optically thin. By changing the velocity of expansion of the molecules, MIU can be made independent of R. The velocity of expansion that we found for the C_2 molecule is:

$$v(exp) = 0.76R^{-0.25}$$

while the scale length varies as $L = L_0 R^{1.75}$.

It is found that the above velocity law: a) gives a MIU independent of solar distance. b) Reproduces a light curve that fits the visual observations better than other velocity laws. c) A plot of scale lengths found for different molecules and comets, is consistent with this expansion law. d) A plot of observed velocities of expansion is better fit by a $R^{-0.25}$ dependence, than by any other. e) This law can be explained on physical grounds.

The law used recently by several authors $v(exp) = 0.58R^{-0.5}$, produces a poorer fit of the data.

PYRAMID OF THE LIGHT CURVE OF COMET KOHOUTEK 1973f

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We describe a graphical representation that we call "the pyramid of the light curve", which results of using a reflected logarithmic paper to represent the light curve of the comet. Then the whole light history of the body can be seen with time running (non-linearly) on the horizontal axis. We use the pyramid of the light curve of comet Kohoutek 1973f, to derive the production of water as a function of time. From this information the total consumption of water (the "water budget") can be derived. We use the calibration Q(OH) versus visual magnitude, where Q is the production rate of OH, which was originally derived for comet Halley. We find that this calibration fits well the OH observations of this comet. If the amount of other gases and dust lost in the apparition are known,